

Provisional Stenting in Left Main vs. Non-Left Main Complex Bifurcation Stenoses: Is There a Diference?

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Disclosure

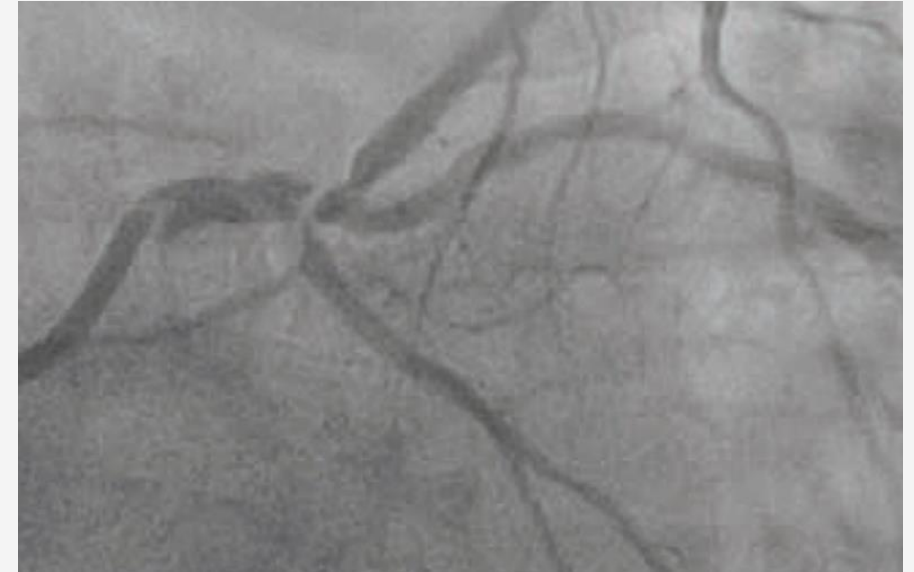
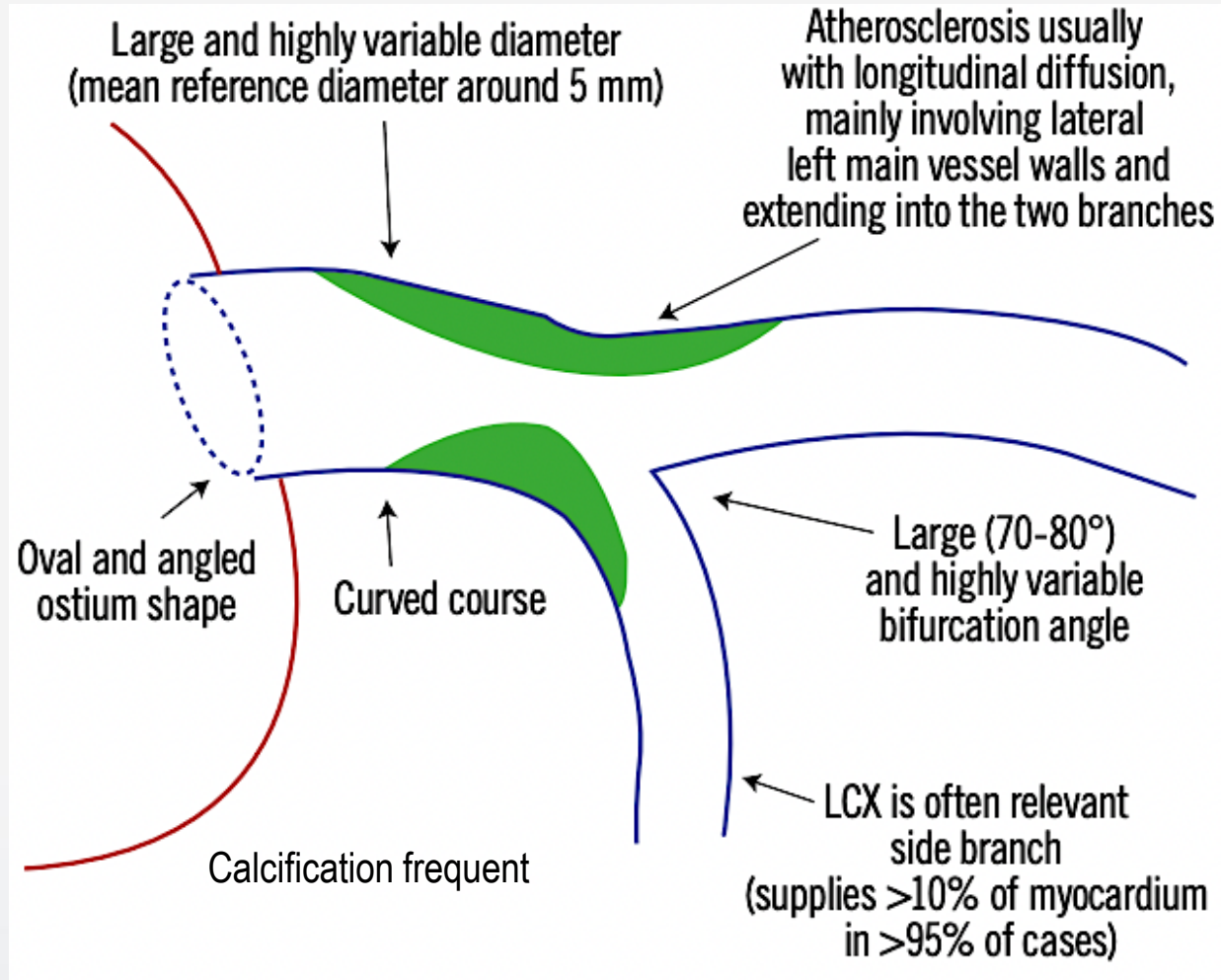
I have the following potential conflicts of interest to report:

Grant/Research Support: Asahi Intecc

Proctoring Fees/ Speakers Honoraria: Boston Scientific, Abbott Vascular,
Bio-Excel, Teleflex Medical

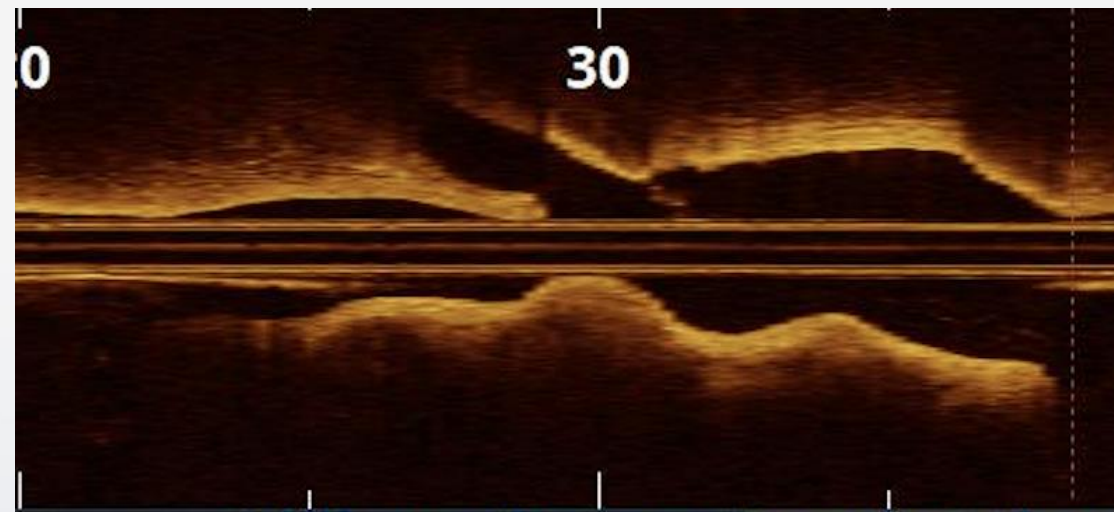
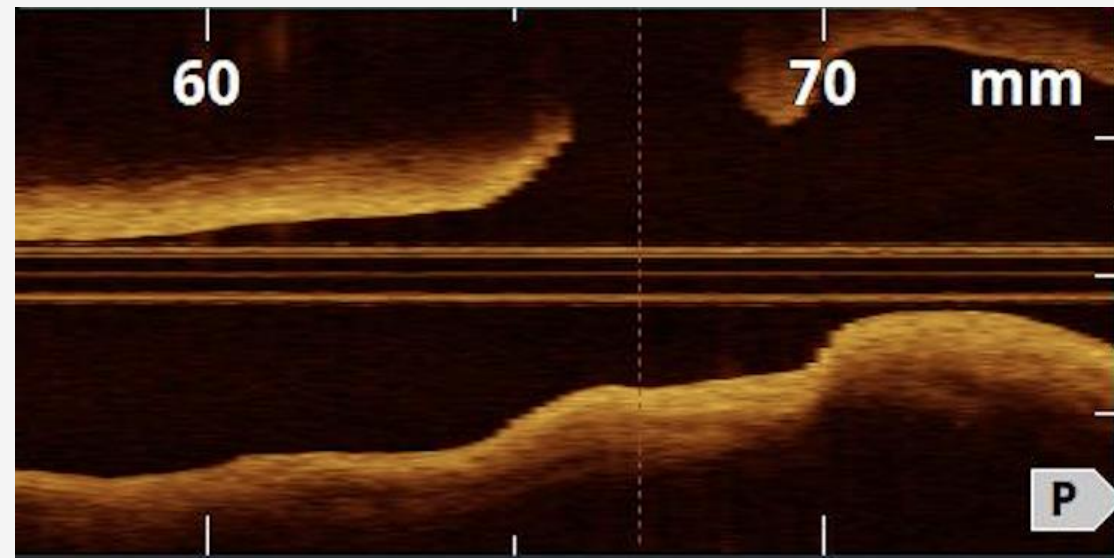
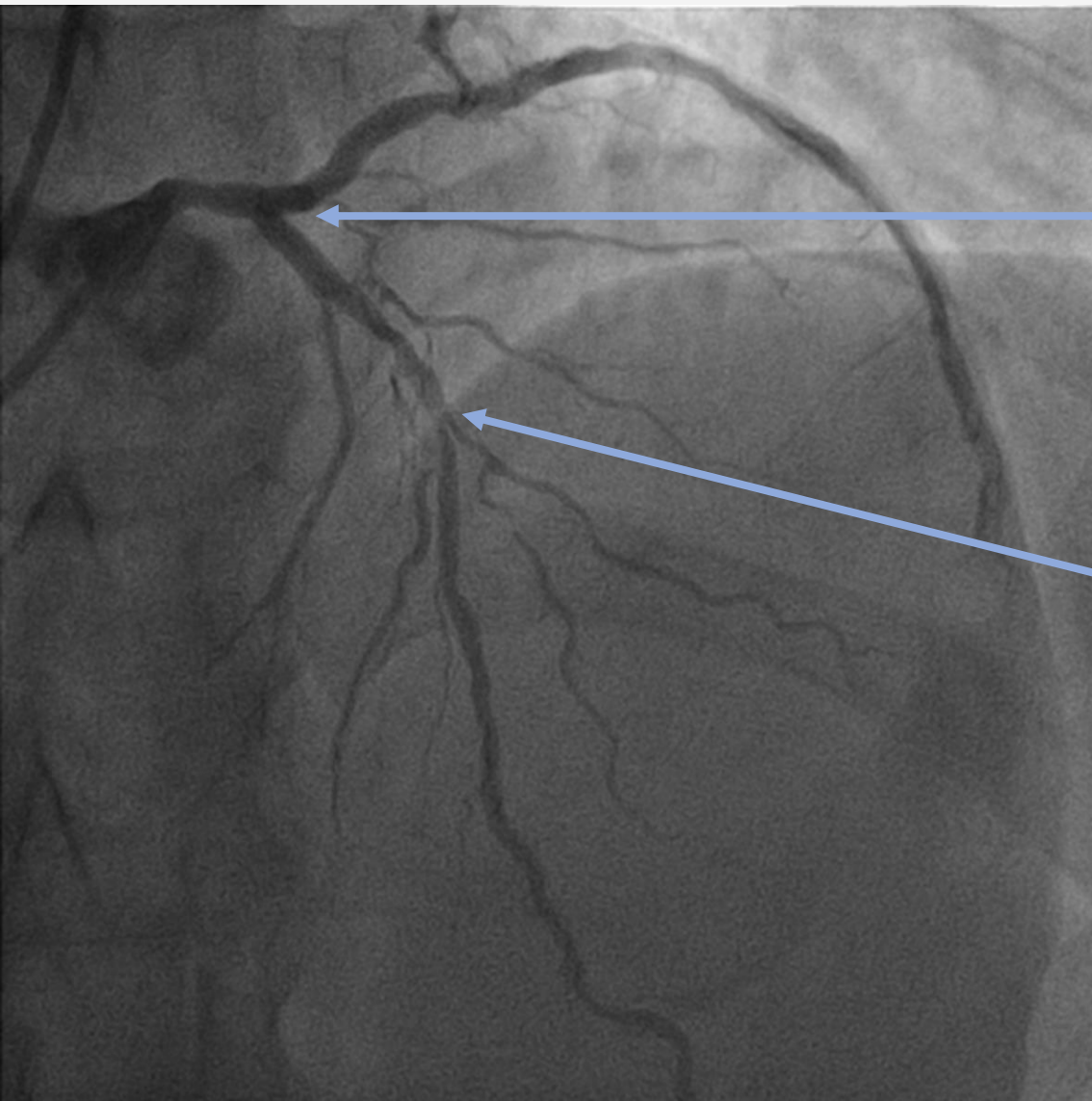
Shareholder: Seigla Medical

The LMCA Bifurcation is different

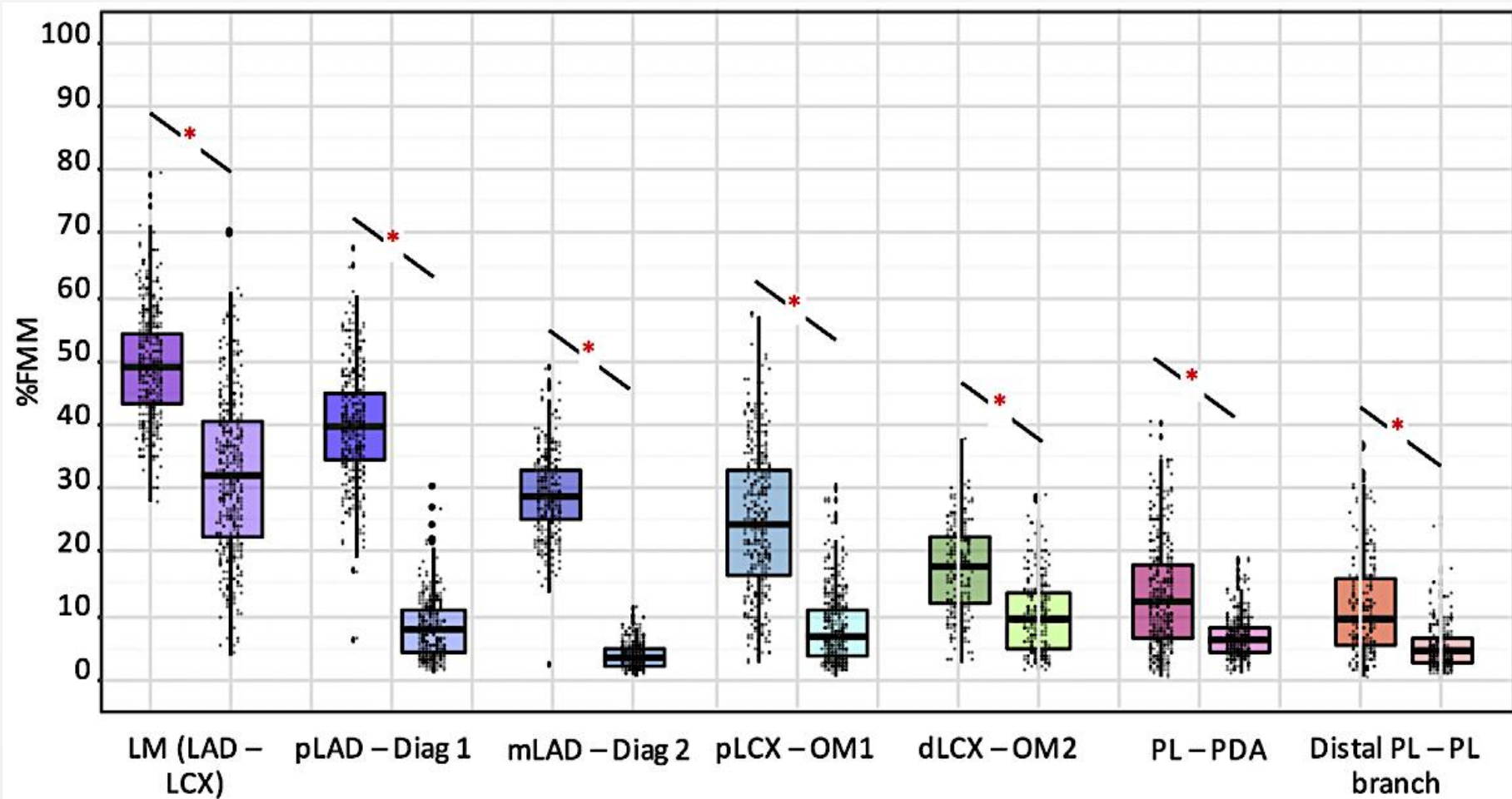


Trifurcation in 10%

Difference in Geometry and SB Compromise

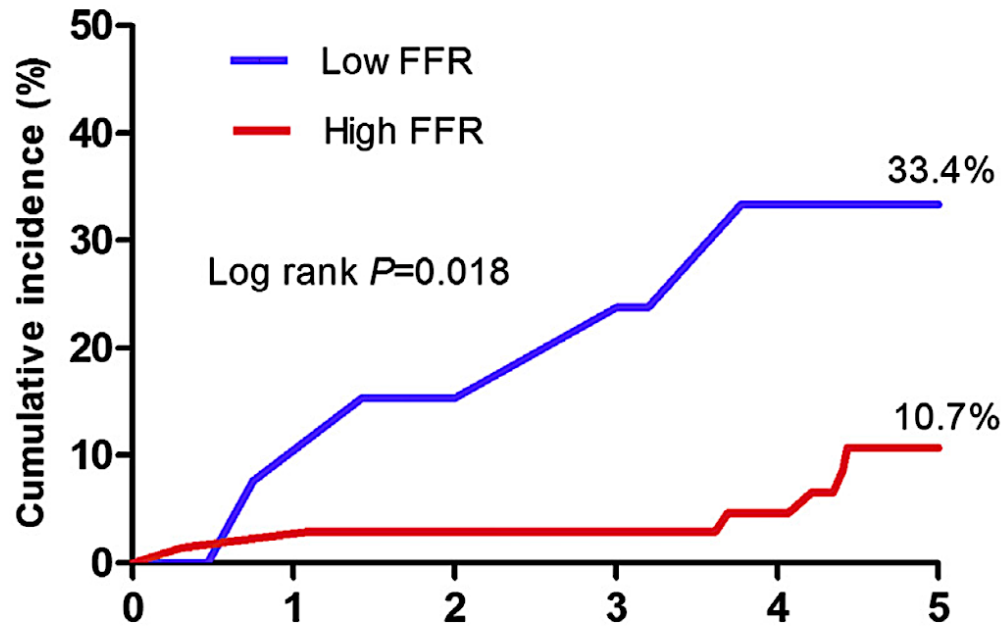


Myocardium Subtended by Major Coronary Arteries and Branches



5-Year Outcomes According to FFR of Circumflex After LM Crossover Stenting

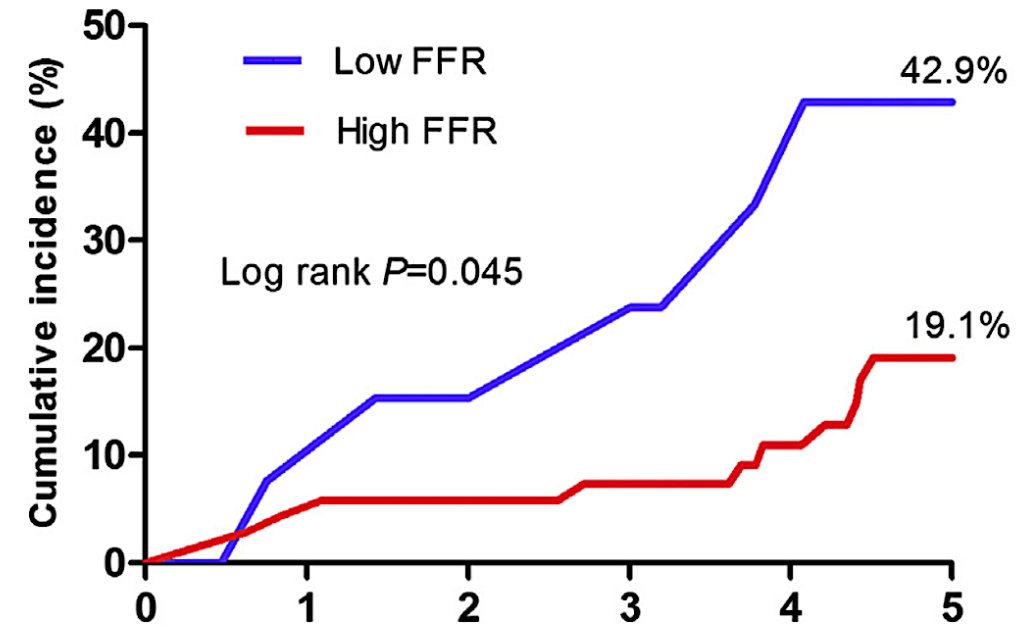
Target-lesion failure



No. of patients at risk Years after PCI

Low FFR	14	13	12	11	8	4
High FFR	69	69	66	60	51	37

MACE

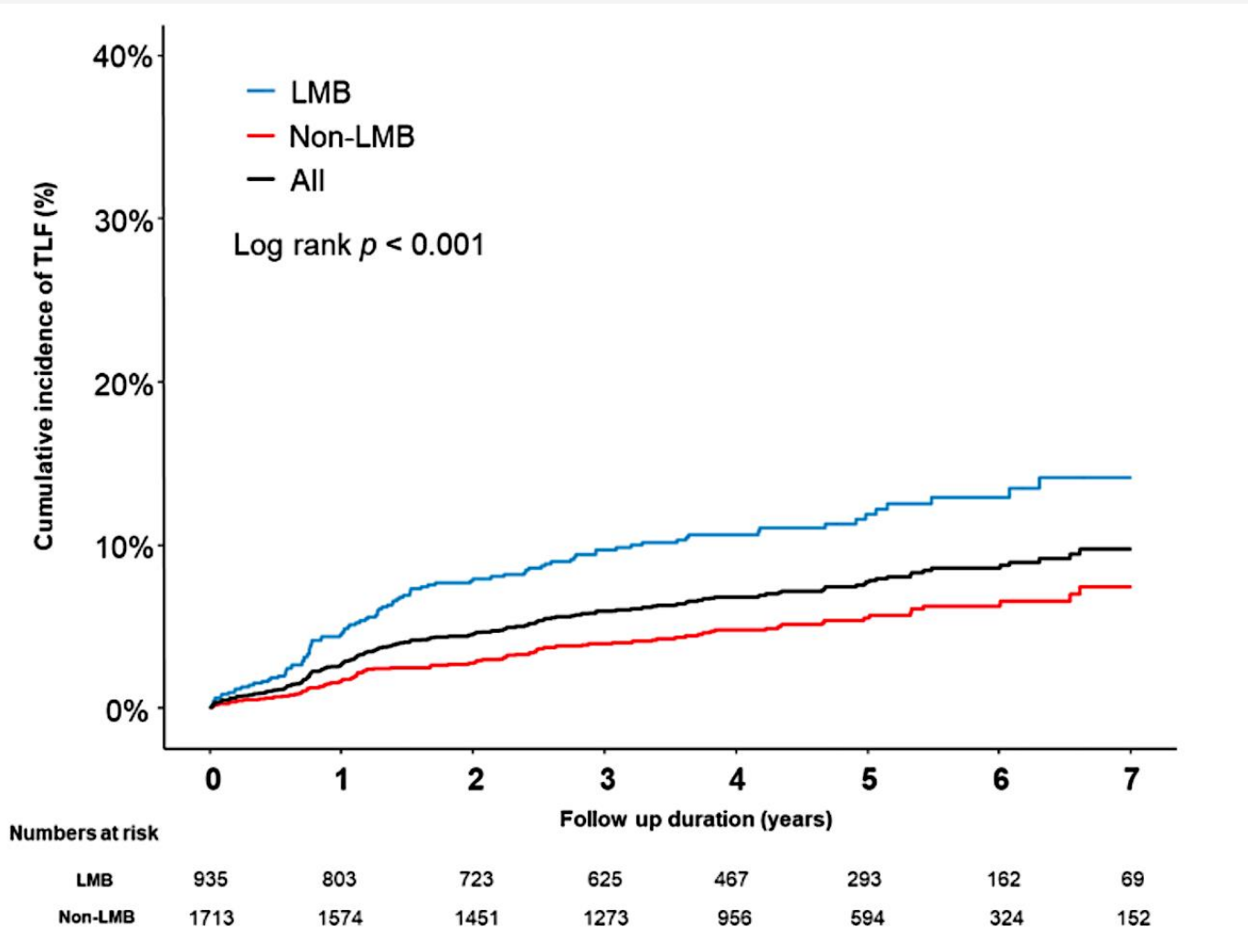


No. of patients at risk Years after PCI

Low FFR	14	13	12	11	8	4
High FFR	69	67	64	57	48	34

Outcomes for LM vs. Non-Left Main Bifurcations

Coronary bifurcation stent III registry, Korea



LMB group ($n = 935$)

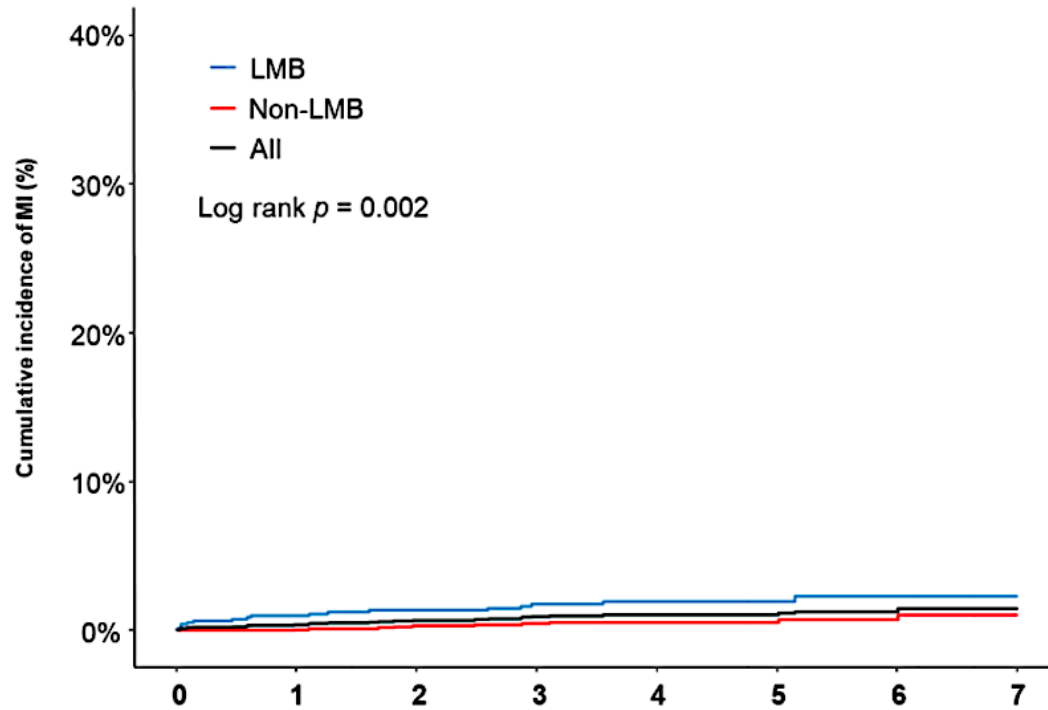
Non-LMB group ($n = 1713$)

Primary outcome was the 7 year incidence of target lesion failure (TLF)

Outcomes for LM vs. Non-Left Main Bifurcations

Coronary bifurcation stent III registry, Korea

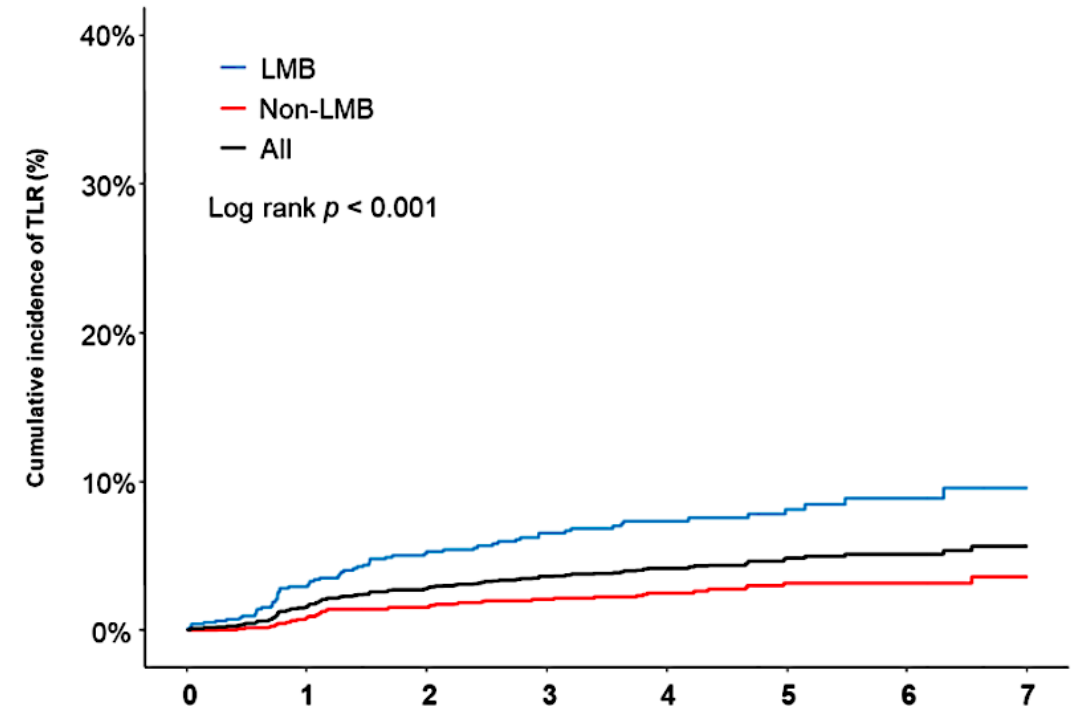
(c) 7-year target vessel myocardial infarction



Numbers at risk

LMB	935	822	754	655	491	310	170	72
Non-LMB	1713	1588	1470	1297	981	613	337	157

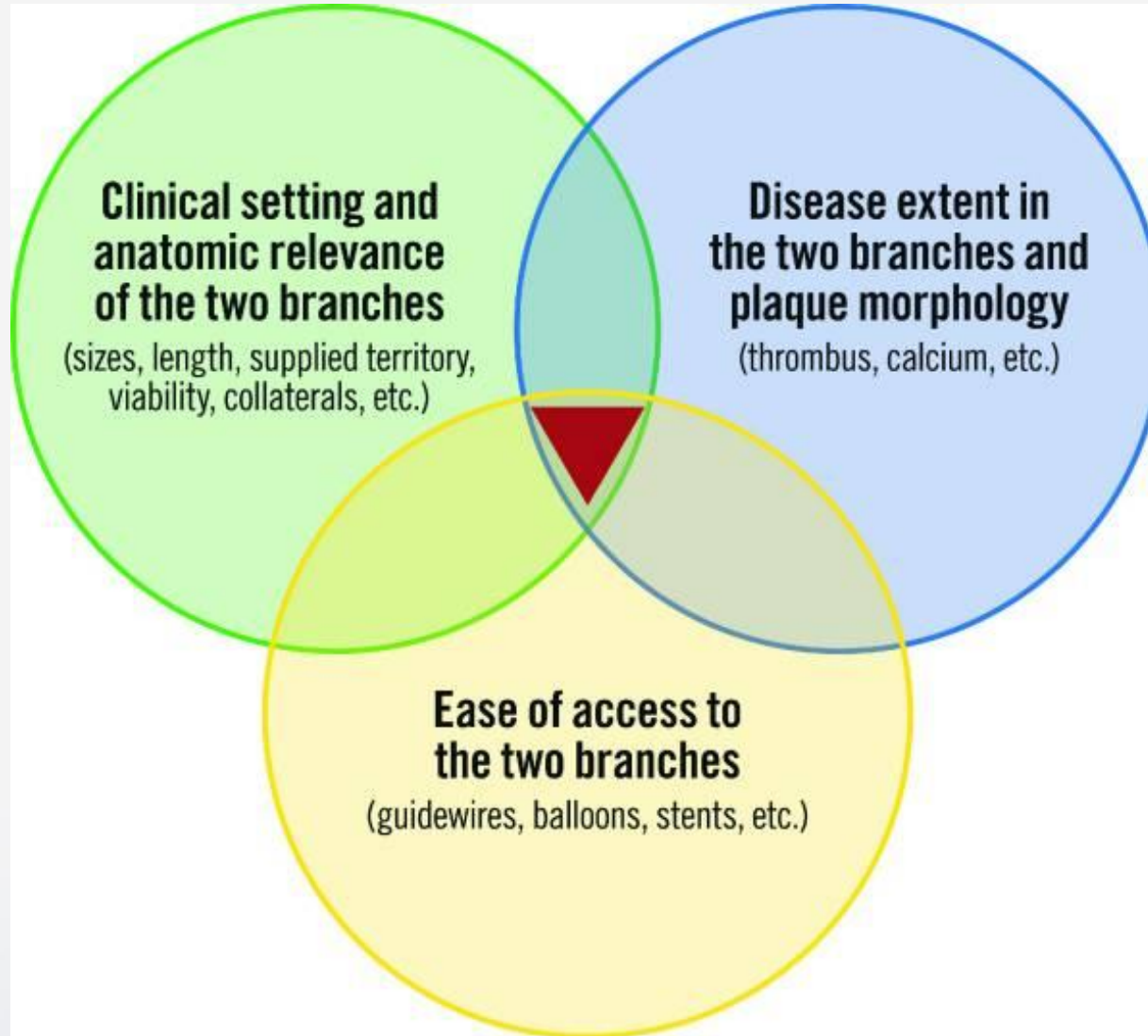
(d) 7-year target-lesion revascularization



Numbers at risk

LMB	935	812	734	633	472	296	163	69
Non-LMB	1713	1587	1466	1287	966	602	329	154

Main Determinants of Bifurcation PCI Complexity



DEFINITION Criteria

Major criteria

For left main distal bifurcation lesions - SB lesion length ≥ 10 mm AND - SB diameter stenosis $\geq 70\%$

For non-left main distal bifurcation lesions - SB lesion length ≥ 10 mm AND - SB diameter stenosis $\geq 90\%$

Complex coronary bifurcation lesions = 1 major criterion + any 2 minor criteria

SB: side branch

Minor criteria

Moderate to severe calcification

Multiple lesions

Bifurcation angle $< 45^\circ$ or $> 70^\circ$

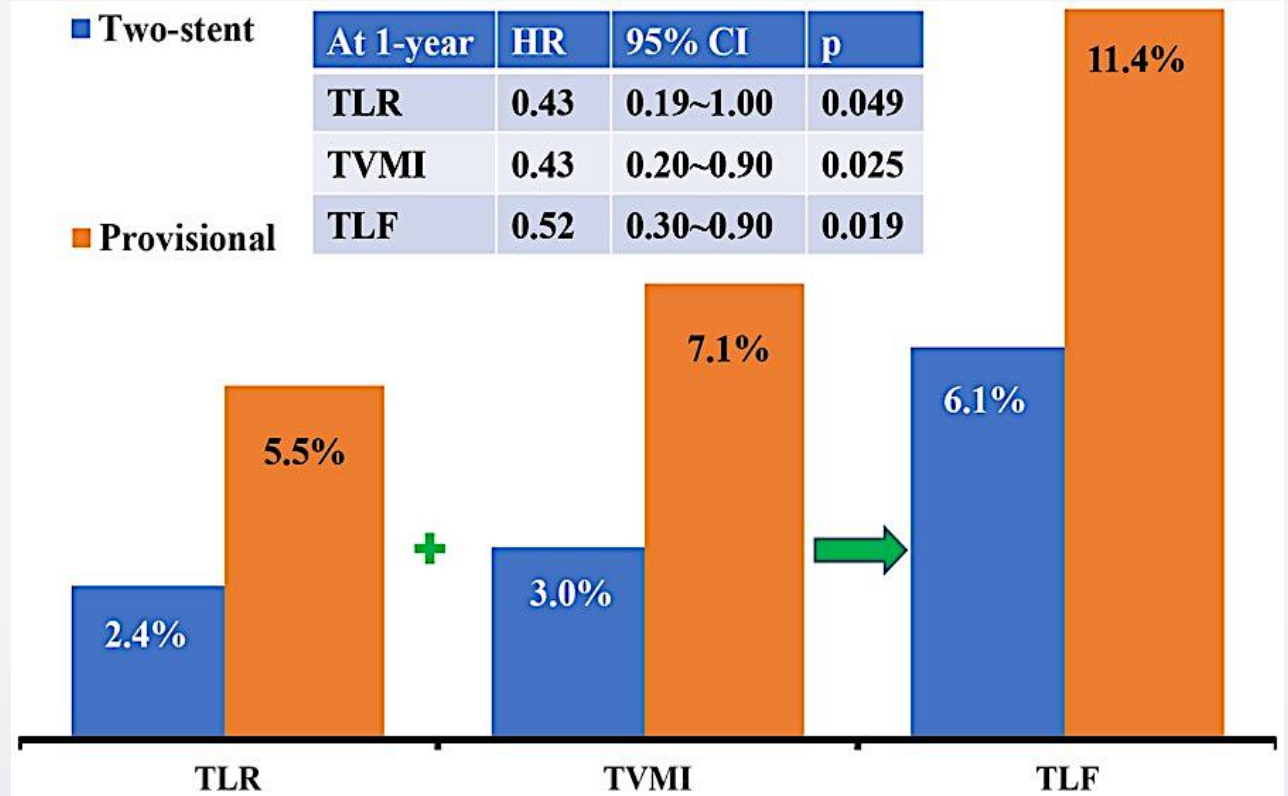
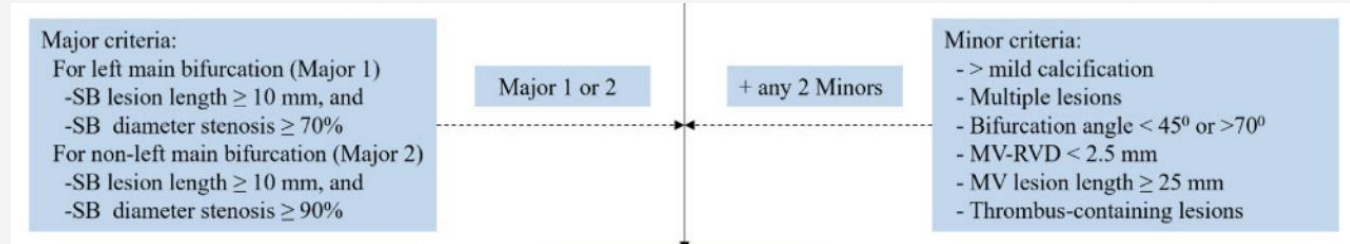
Main vessel reference vessel diameter < 2.5 mm

Thrombus-containing lesions

Main vessel lesion length ≥ 25 mm

DEFINITION II trial

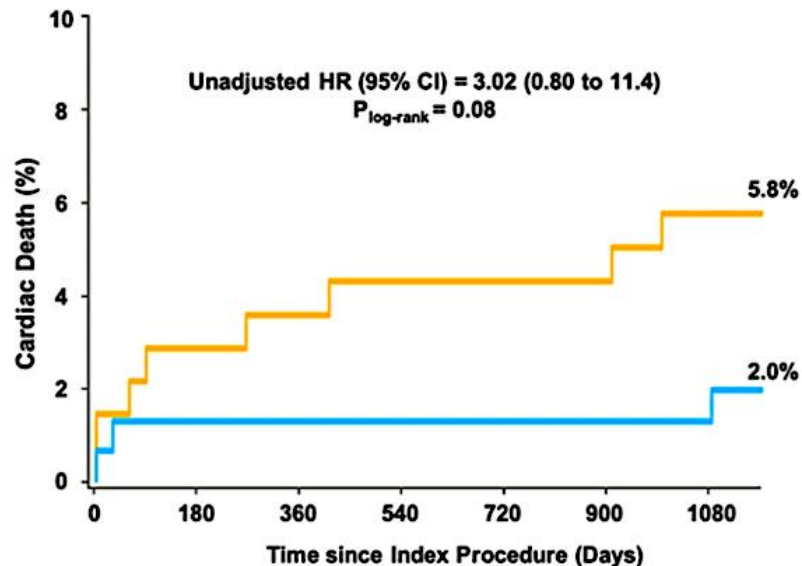
- Multicentre, randomized trial with 653 patients with DEFINITION criteria-defined complex coronary bifurcation lesions (Medina 1,1,1 or 0,1,1 and SB > 2.5 mm)
- Primary endpoint: Target lesion failure at 1 year (cardiac death, target vessel MI, or target lesion revascularization)
- Two-stent: 77.8% DK Crush, 17.9% Culotte
- PS: 64.4% TAP, 19.2% DK Crush, 16.4% Culotte



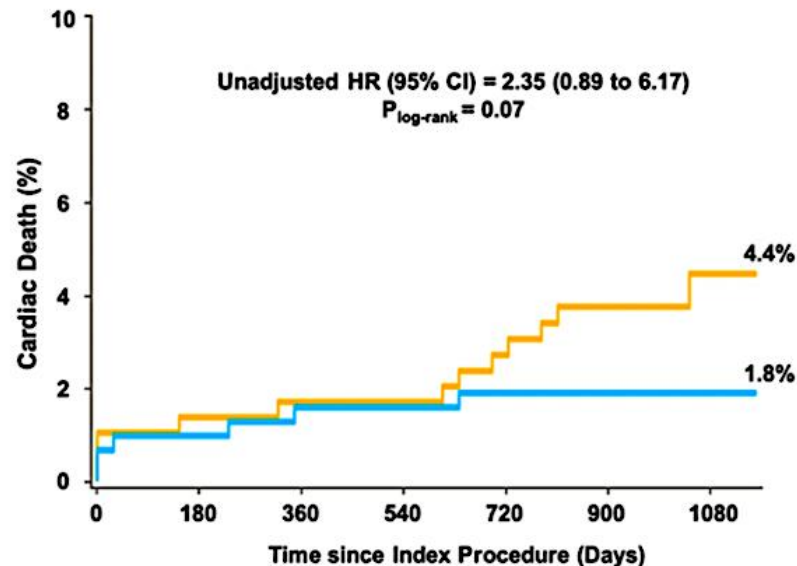
Validation of bifurcation DEFINITION criteria and comparison of stenting strategies in true left main bifurcation lesions

Juan Wang^{1,5}, Changdong Guan^{2,5}, Jue Chen¹, Keifei Dou^{1,3}, Yida Tang^{1,3}, Weixian Yang^{1,3}, Yanpu Shi¹, Fenghuan Hu¹, Lei Song¹, Jiansong Yuan¹, Jingang Cui¹, Min Zhang⁴, Shuang Hou⁴, Yongjian Wu^{1,3}, Yuejin Yang^{1,3}, Shubin Qiao^{1,3} & Bo Xu^{2,3}

Complex LM Bifurcation Group

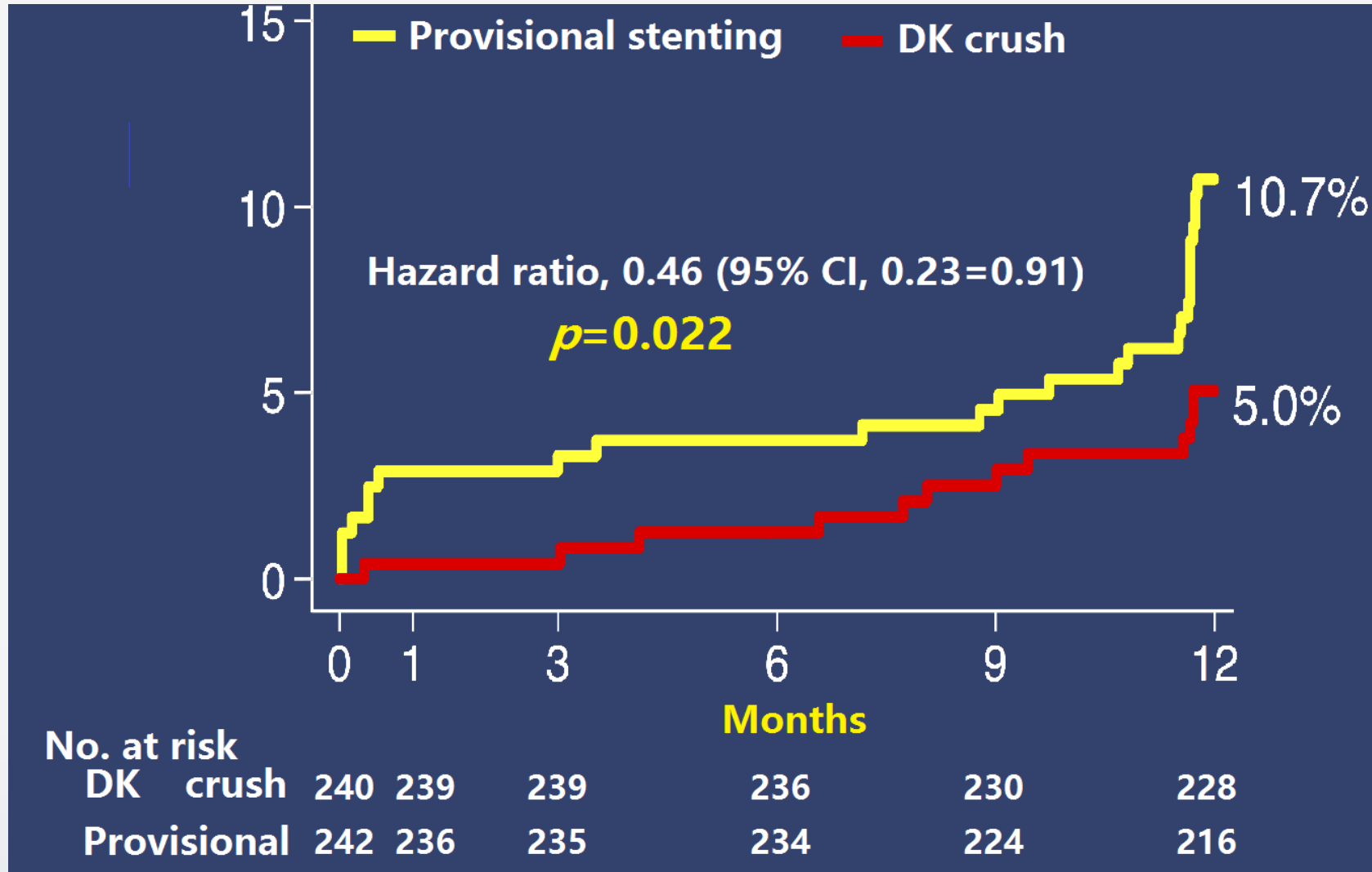


Simple LM Bifurcation Group



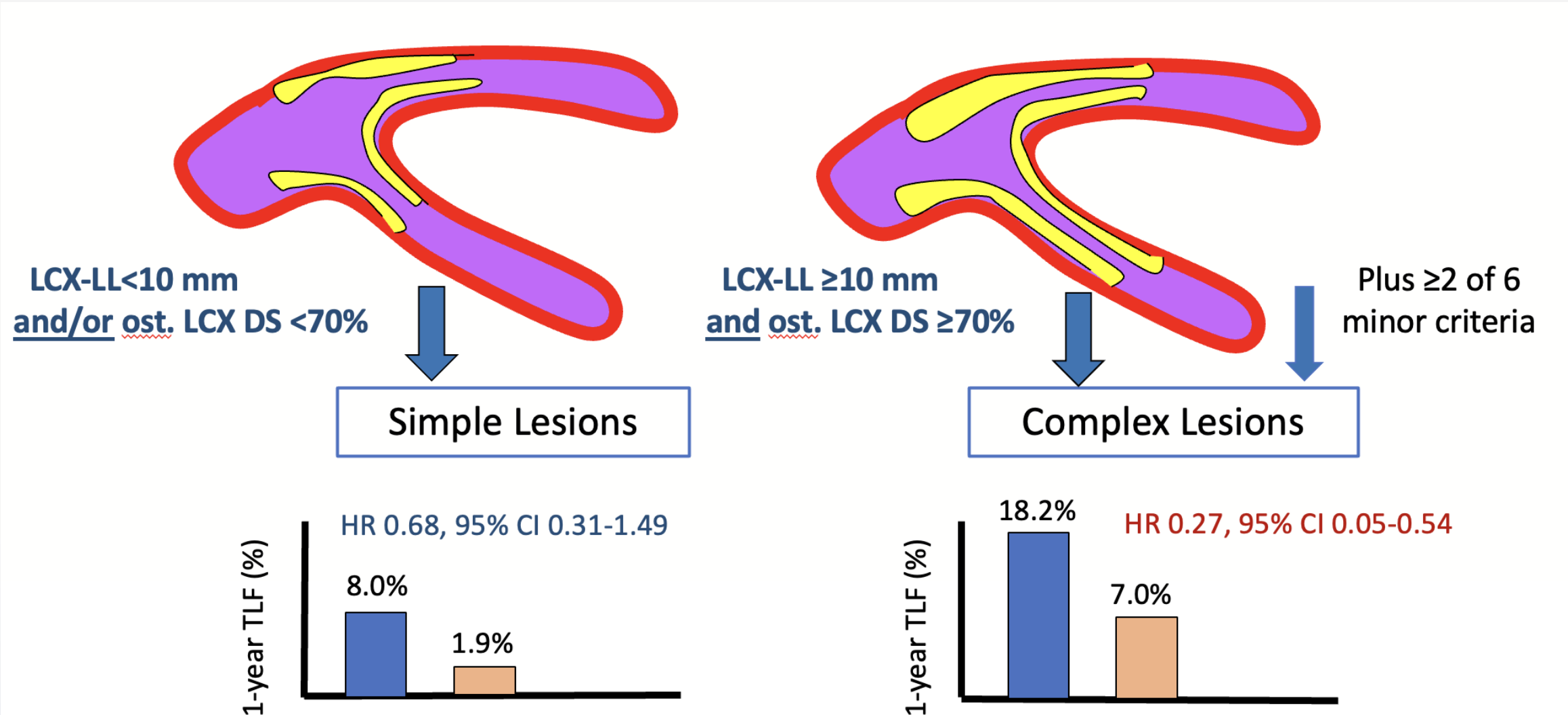
— 1 stent strategy
— 2 stent strategy

DK CRUSH V : Primary Endpoint (TLF)

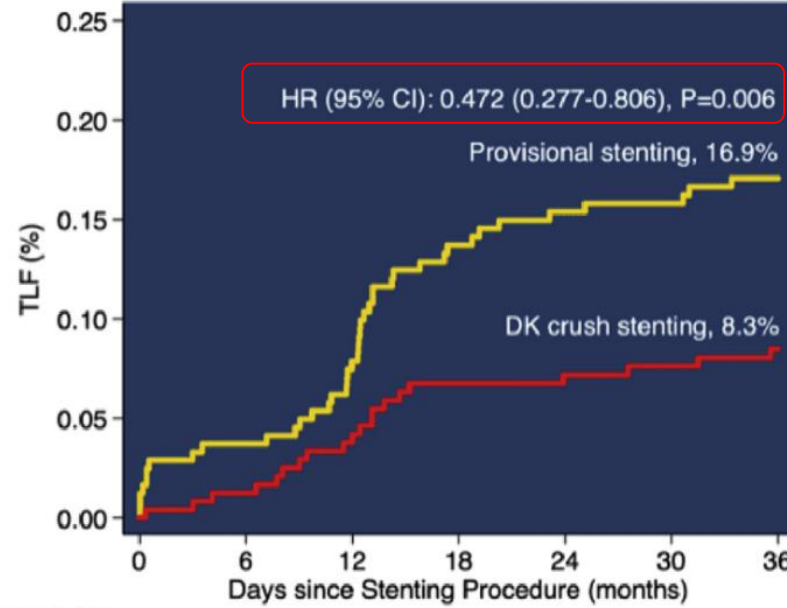


Chen SL, et al.
 JACC 2017

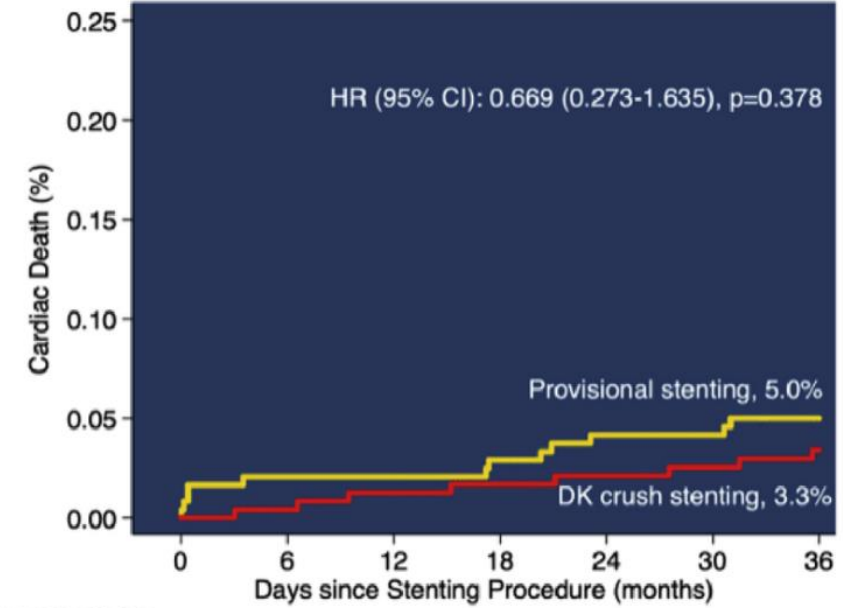
DKCRUSH V: Simple vs. Complex Bifurcation Lesions – TLF at 1 Yr



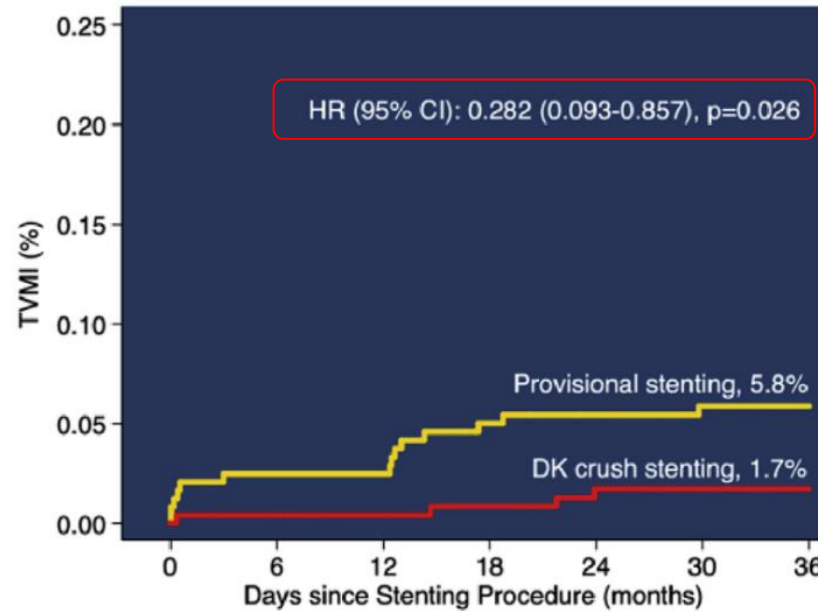
DKCRUSH-V 3-Year Outcomes



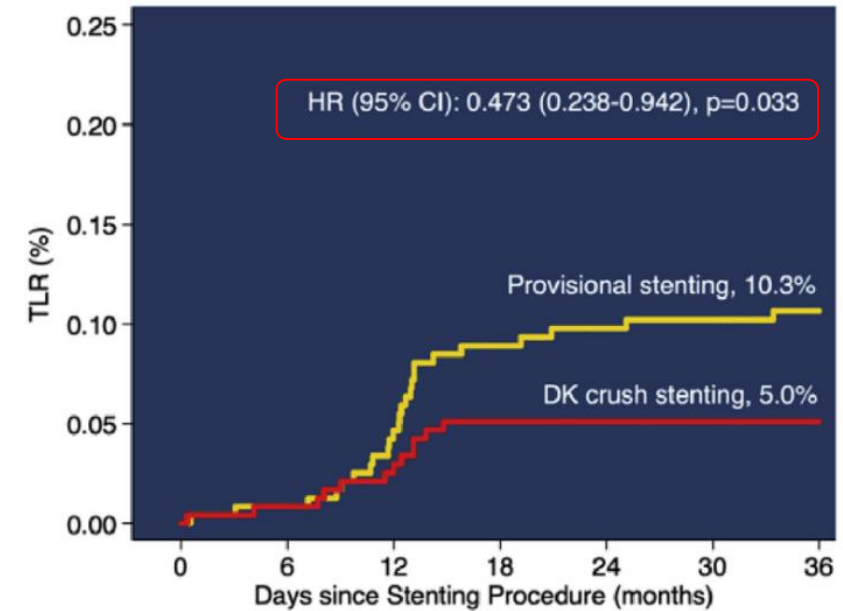
Number at risk		0	6	12	18	24	30	36
PS group	242	232	222	206	201	200	194	
DK group	240	235	226	220	217	215	213	



Number at risk		0	6	12	18	24	30	36
PS group	242	236	236	232	228	228	223	
DK group	240	237	233	231	228	226	224	



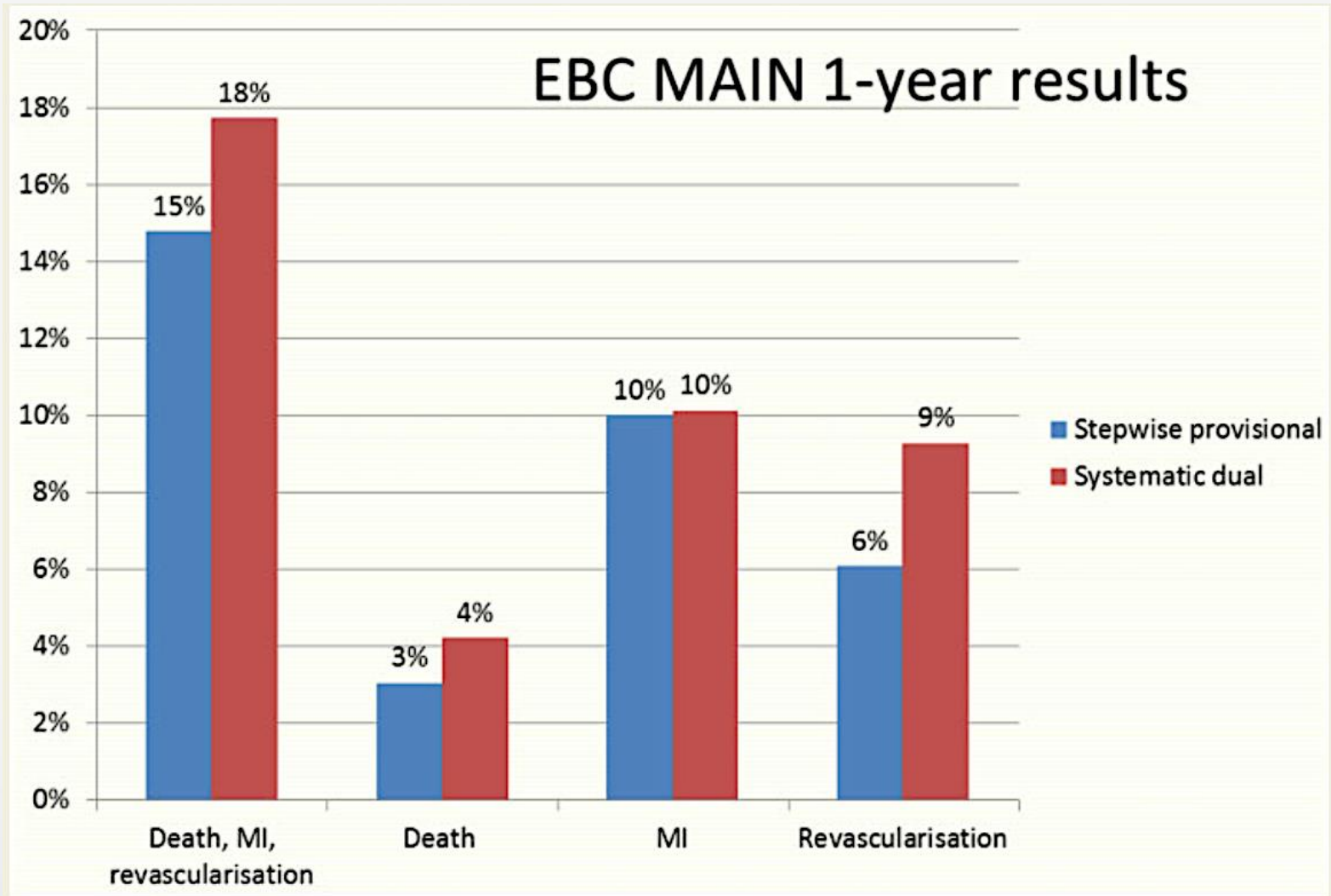
Number at risk		0	6	12	18	24	30	36
PS group	242	232	231	223	219	218	213	
DK group	240	236	232	229	224	222	220	



Number at risk		0	6	12	18	24	30	36
PS group	242	234	224	212	207	206	200	
DK group	240	236	226	220	218	216	214	

Chen X, et al. JACC
Cardiovasc Interv. 2019 Oct
14;12(19):1927-1937

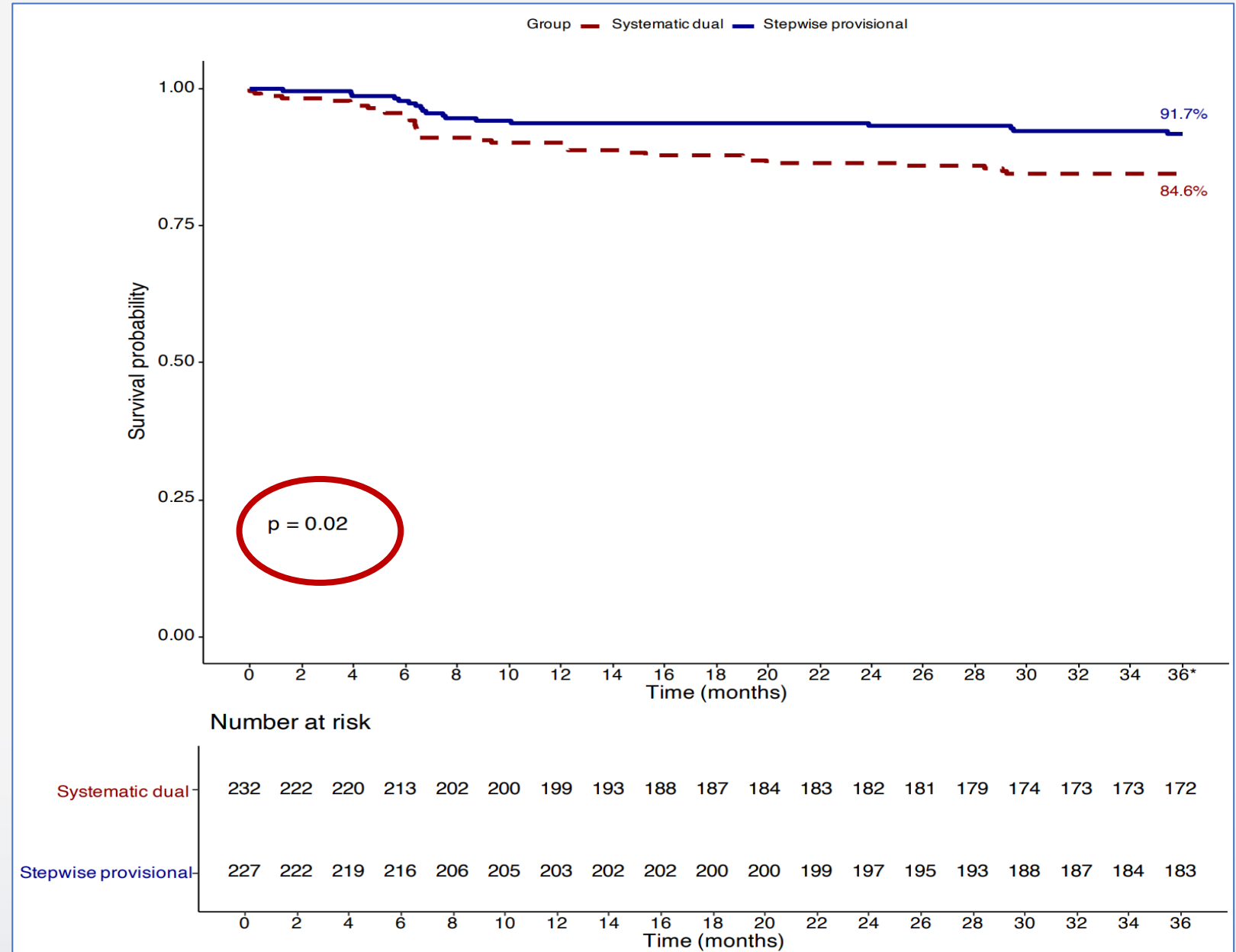
EBC MAIN Trial



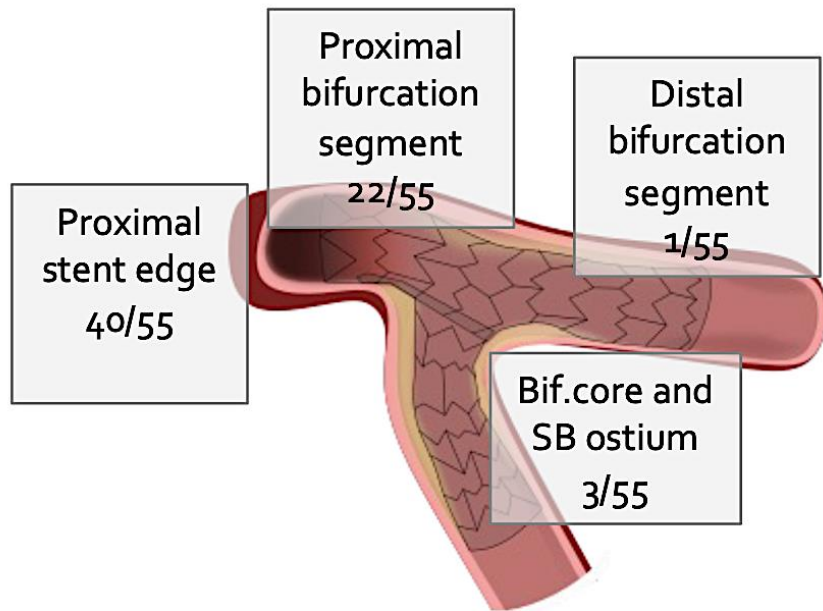
Important differences between DK CRUSH V and EBC MAIN:

- Side branch disease longer (16 mm vs 7 mm) in DK CRUSH V
- Syntax score higher (31 vs 23) in DK CRUSH V

EBC MAIN 3 year Target Lesion Revascularisation



OCTOBER Trial – Unintended Stent deformation

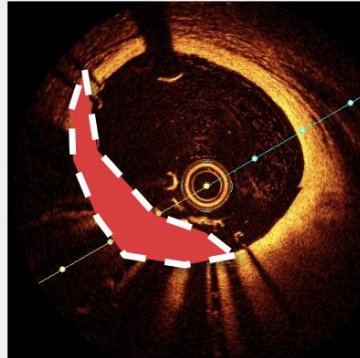
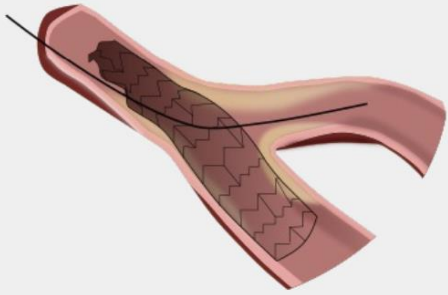


	OCT-guided procedure	USD
Left-main*	146/589 (25%)	27/146 (18.5%)
LAD/D bifurcation	383/589 (65%)	26/383 (6.8%)
Cx/OM bifurcation	51/589 (8.7%)	2/54 (3.7%)

*Including Left-main bifurcations and other bifurcation treatments with stent implanted in the Left-main

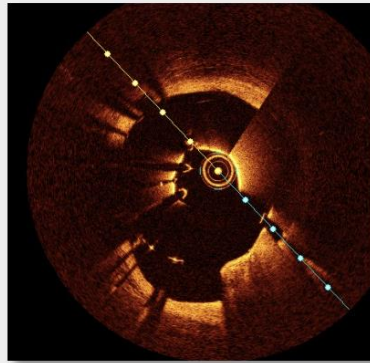
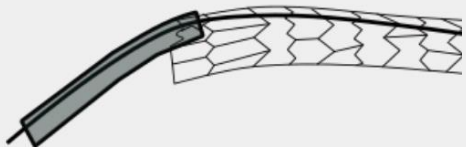
USD – Mechanism and Outcome

Abluminal rewiring



24/55 (44%)

Guide catheter collision



20/55 (40%)

USD left untreated (n=30)	No USD or unknown (n=559)	Log Rank
23.3%	9.4%	0.007

USD left untreated (n=30)	Treated or unknown final USD status (n=25)	Log Rank
23.3%	0.0%	0.014

Conclusions

- The LMCA is different
- Outcomes for LM vs. non-LM bifurcation PCI are worse reflecting the large amount (approximately 70%) of jeopardized myocardium
- A provisional stenting strategy can be utilised in the majority of complex (DEFINITION criteria) non-LM bifurcations as few side branches supply < 10% of the myocardium
- A step-wise layered provisional approach for the LM bifurcation was shown to be non-inferior to an up front 2 stent strategy in EBC Main
- However, in complex LM bifurcation lesions it reasonable to use an up-front 2 stent strategy